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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Amendment of Part 95 of the	)	WT Docket No. 95-102
Commission's Rules to	)	
Establish a very short distance	)	DOCKET FILE COPY ORIGINAL
two-way voice radio service	)	

COMMENTS ON A NOTICE OF PROPOSED RULEMAKING

Bennett Z. Kobb, licensee of Station KAE 8949 in the General Mobile Radio Service (GMRS), responds to this Notice of Proposed Rulemaking (NPRM) to establish a Family Radio Service (FRS) as a new category of Citizens Band Radio Service, in spectrum allocated to the GMRS.

COMPLIANCE MUST BE HARDWARE-BASED

If four decades of personal wireless communications in America have taught anything, it is this: tangible safeguards against abuse must be built into any radio transmitting apparatus marketed to consumers for unlicensed operation.

The record is clear: unlicensed consumers – many of them children – will not voluntarily comply with necessary radio rules and practices absent hardware-based compliance.[1] Nor will the FCC fulfill its enforcement responsibilities in a mushrooming consumer radio service, whose users have paid nothing for licenses, are likely unaware of any operating rules, and who are probably unconscious even of the Commission's existence.

The NPRM correctly proposes to "regulate the usage of the FRS units through technical standards and type certification."[2] The proposed minimalist rules and standards require additional features to promote compliance. As

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[1] The FCC's attempts to regulate the amok Citizens Band Radio Service are incisively recounted in *CB in Perspective: The First Thirty Years* by Carolyn Marvin and Quentin J. Schultze, Journal of Communication, Vol. 27 No. 3, Summer 1977.

[2] NPRM at 9.

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documented in the majority of the comments on RM-8499, adequate hardware-based safeguards in FRS are imperative because it would share spectrum and nearly equivalent power levels with the licensed and disciplined GMRS.[3]

FRS MUST BE SECONDARY

The fundamental omission from the NPRM is the designation of the FRS as a secondary radio service. Unlicensed FRS consumers must not interfere with, and must accept interference from, licensed services. The petitioner in this docket, Tandy Corporation, proposed secondary status for FRS.[4] The Commission acknowledged this request,[5] but neglected to include it in the proposed rules.

The Commission must correct this oversight if known, accountable, and fee-paid GMRS licensees are to have any meaningful legal protections – especially when they operate *on the same channels as unlicensed FRS consumers.* [6]

Designation of FRS as co-primary would inevitably invite intense licensee opposition. This commenter is unaware of any licensed service that shares essentially the same privileges on the same channels with an unlicensed service.

FRS UNITS MUST HAVE NO EXTERNAL RF, TRANSMIT AUDIO OR KEYING CONNECTIONS OR DUPLEX CAPABILITY

The NPRM correctly observes that repeater operation is "inconsistent with the type of communications FRS is designed to satisfy."[7] The NPRM also provides that only voice communications may be transmitted. It is not enough, however, to forbid such operation to FRS consumers by means of operator rules.

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[3] The NPRM's reliance on the "FM capture effect" as a means to limit interference is particularly misplaced (NPRM at 8). UHF FM signals can and do destructively interfere with each other, resulting in useless and offensive noise.

The requirement of analog FM emissions for FRS is neither necessary from a cost standpoint nor consistent with the Commission's promotion of digital technologies.

[4] Tandy petition RM-8499 at II.

[5] NPRM at 4.

[6] "[T]he seven shared channels we propose for FRS are currently available to GMRS systems for communications similar to that proposed for the FRS." NPRM at 10.

[7] NPRM at footnote 28.

Devices that convert individual or paired transceivers to simplex or duplex repeater operation are widely sold on the open market. Appendix A shows one example, a high-end model. Others are available at low prices.

Proposed FRS Rule §95.194(c) would forbid attachment of repeater or encryption devices to FRS units. Proposed FRS Rules §95.193(a) and §95.629(d) forbid transmission of data communications except for selective calling.

By themselves, these rules would prove ineffective. There will be temptation to extend range by conversion of FRS units to repeater service, to connect voice scrambling accessories, and to conduct data communications by "plug-and-play" attachment of inexpensive packet controllers. The current enforcement climate will not inhibit such shenanigans.[8]

External RF power amplifiers for the UHF spectrum are widely available and legal for licensed use. FRS could become a tremendous boon to the UHF amplifier market. Hardware measures to deter FRS connection to power amplifiers are thus also necessary.

The Rules must withhold authorization from any FRS transceiver that has external RF, transmit audio input or transmit key connections or cabling, or that could readily be altered by the user to provide such connections or cabling.[9]

This would forbid the authorization of FRS units with "unique" connectors or hard-wired accessories such as speaker-mikes or headsets. Such accessories, cabling or connectors could still be used to circumvent a prohibition on repeater, amplifier, external antenna or packet data connections.

Similarly, the FCC must not authorize any FRS transceiver capable of duplex operation (transmitting and receiving on different channels automatically).

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[8] Compliance and Information Bureau engineer Ralph Barlow confirmed, before licensees, manufacturers, associations and media, that the FCC will not investigate CB violations or enforce the CB Rules. *See* W5YI Report Vol. 17 Issue 15, August 1, 1995; *Compare* Report and Order, PR Docket 82-799, May 10, 1983 at 43: "We are not abandoning the Citizens Band Radio Service."

[9] The manufacturer must supply the FCC with a statement describing the methods used to comply with this requirement. *See* §2.975(a)(8); 2.1033(b)(12); 15.121(a) and 15.214.

Otherwise, a consumer could transmit to a FRS repeater on the 467 MHz interstitial channel and automatically receive on the 462 MHz interstitial channel.[10]

Of course, even without duplex capability, users of illegal FRS repeaters could manually switch to a "receive" channel after talking on a "transmit" channel. Alternatively, they could utilize the voice-store method of simplex repeater operation (see Appendix A). Packet data repeaters rely on simplex links also. Therefore, a prohibition on duplex use in the FRS operator rules, while essential, is not a panacea for the problems inherent in an unlicensed FM service.

FRS MUST NOT IMPEDE TECHNOLOGY

Only F3E emission would be permitted in FRS. As the Commission is well aware, digital voice emissions offer substantial benefits over F3E in capacity, efficiency and security.

Should an applicant offer for experimental or regular authorization a FRS system using digital voice emissions, the FCC should grant authorization upon a showing that the licensed GMRS will not be negatively impacted. Alleged negative impacts on analog F3E FRS operations must not be a dispositive consideration. The secondary F3E FRS must not impede the movement of the personal wireless services into a spectrum-efficient digital era.

THE COMMISSION SHOULD EMPLOY VOLUNTEER COMPLIANCE AID

Section 47 U.S.C. 154 (D) of the Communications Act permits the Commission to recruit, train, accept and employ the voluntary and uncompensated services of CB operators in the detection of improper CB transmissions; conveyance of compliance information to the Commission; and issuance of advisory notices to apparent violators.

All of these provisions apply to the FRS as a CB Service. The Commission should work with the personal wireless user community to establish an effective FRS compliance aid program as provided for in the Act.

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[10] The wisdom of permitting the FRS anywhere below 900 MHz is questionable, especially at 467 MHz, in view of *inter alia*, the susceptibility of GMRS repeater inputs to undesired signals and the inability of conventional repeaters to change channels upon encountering interference.

SUBPART B SHOULD INCLUDE A LIST OF FREQUENCIES

Proposed Rule §95.627, "FRS unit channel frequencies," would be located in Subpart E, "Technical Regulations." Because of the sensitive nature of sharing between licensed and unlicensed services as previously explained, the FCC should require that the unlicensed FRS consumer be informed of the exact frequencies the FRS unit uses. This Rule should be moved out of Subpart E and placed in an appropriate location in Subpart B.

MANUFACTURERS MUST SUPPLY A COPY OF THE FRS RULES

Rule §95.669 requires that a copy of Part 95, Subpart D of the FCC Rules, current at the time of packing of the transmitter, must be furnished with each CB transmitter marketed.

As a CB Service, this Rule applies to FRS as well. However, the rule should be amended to reflect that a copy of Part 95, Subpart B (FRS) must be furnished with each FRS transmitter marketed.

CONCLUSION

Equipment authorization is the principal tool to deter unlawful exploitation of FRS. The Communications Act provides for voluntary compliance aid in the CB Services. The simple recommendations herein will improve the prospects for FRS without undue burdens on manufacturers or the public.

Respectfully submitted,

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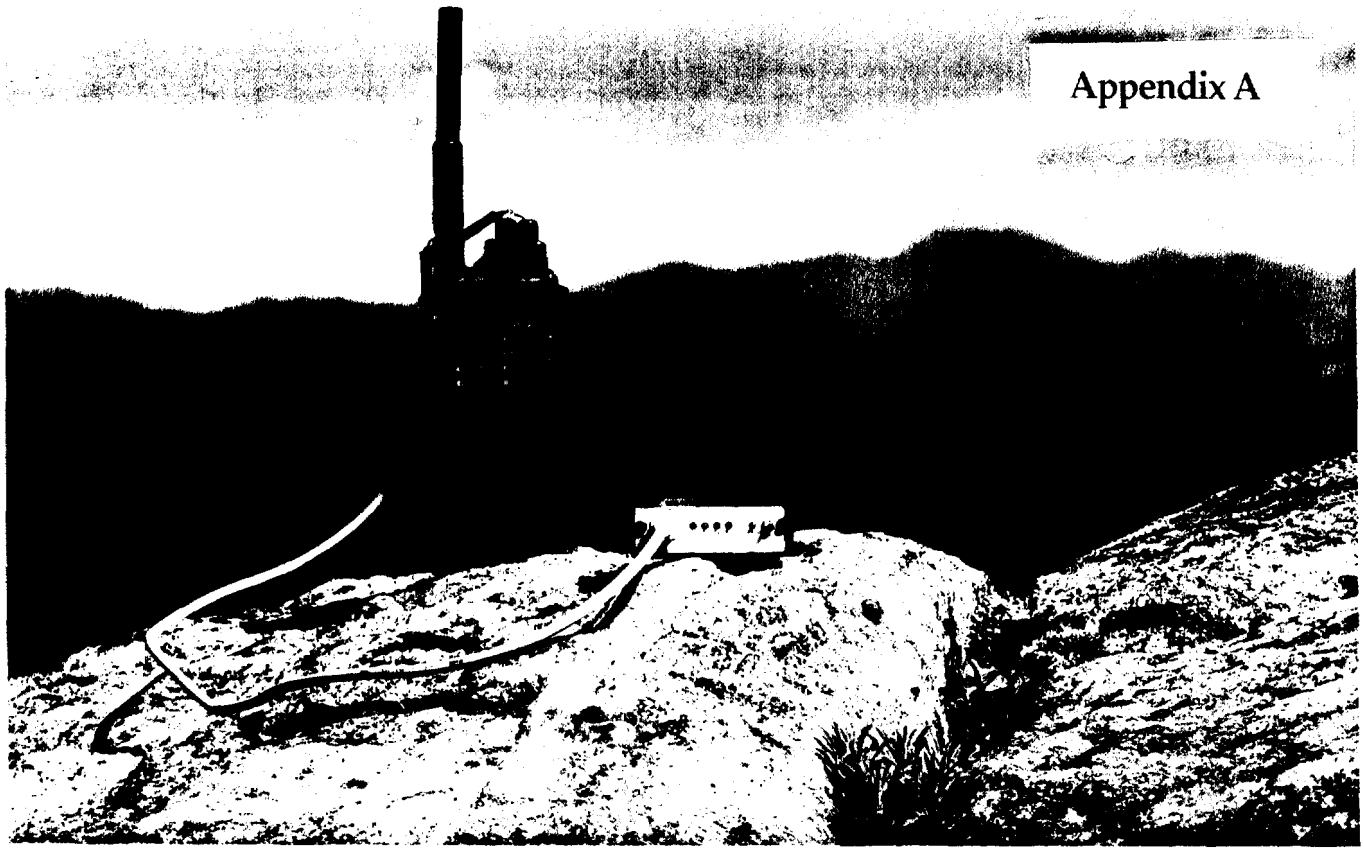
October 2, 1995



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The **HRC-10** features include voice IDer, hang and time-out timers, Digital Voice Operated Squelch (DVOS™), telemetry tones, and private voice mail slot. A DTMF command interface provides remote control capabilities and allows the user to program the operating parameters of the controller. The **HRC-10** uses the latest high-density Direct Analog Storage Technology (DAST™) chip by ISD to provide up to one minute of high quality, non-volatile voice storage.

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Features:

• **Simplex or Duplex Mode Operation** - Records incoming signal (up to 1 minute) and re-transmits after delay in simplex mode. Re-transmits incoming signal and provides hang and time-out timer functions in duplex mode.

• **Flexible interfacing** - Interfaces to any radio using speaker and microphone jacks. Can also be configured as a "repeater-maker" with external COS and PTT lines for repeater receiver and transmitter.

• **DTMF Control and Programming** - Can be remotely controlled and programmed using a simple DTMF command interface.

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• **Courtesy and Telemetry Tones** - Courtesy tone at end of simplex or duplex repeated transmission plus several unique tones to provide feedback for DTMF control and programming functions.

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• **Personal Mailbox Slot** - Records message (up to 30 seconds long) in simplex or duplex repeat mode. Message can be retrieved at any time using DTMF command.

• **External Control Output** - TTL compatible output can be turned on and off using DTMF commands to allow control of external devices.

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• **Microprocessor Controlled** - Powerful single-chip microcontroller based design provides flexible control capabilities and the ability for future feature upgrades and enhancements.

• **Battery or external powered** - Unit can be powered by internal 9V battery or by external DC input. Can also be configured to recharge optional internal NiCd battery from external DC input.

• **Rugged Enclosure** - Heavy duty extruded metal enclosure provides protection for field use.

Technical Specifications:

Audio Interface:

Input configurable for 8 ohm or Hi-Z input impedance (1 volt pk-pk nominal input level).

Output adjustable from 0 to 2 volts pk-pk into 10k ohm load.

COS and PTT Interface:

Audio derived DVOS™ (Digital Voice Operated Squelch) circuit or active low external COS input (TTL level, open collector, or dry contact).

Microphone coupled PTT (for handheld radios) or separate PTT output line (open collector, 100ma sink capability).

Power Requirements:

Internal 9V battery (standard or rechargeable) or external DC input (7-15 VDC).

15ma idle, 40ma maximum current requirements.

Physical Dimensions:

Size: 1.1"H x 2.7"W x 5.3"L

Weight: 9.5oz. with battery

Options:

Custom Cables (Contact Factory)

Rechargeable Battery

CBL-1 Crossband Linking Adaptor (Allows connecting two radios to the HRC-10)

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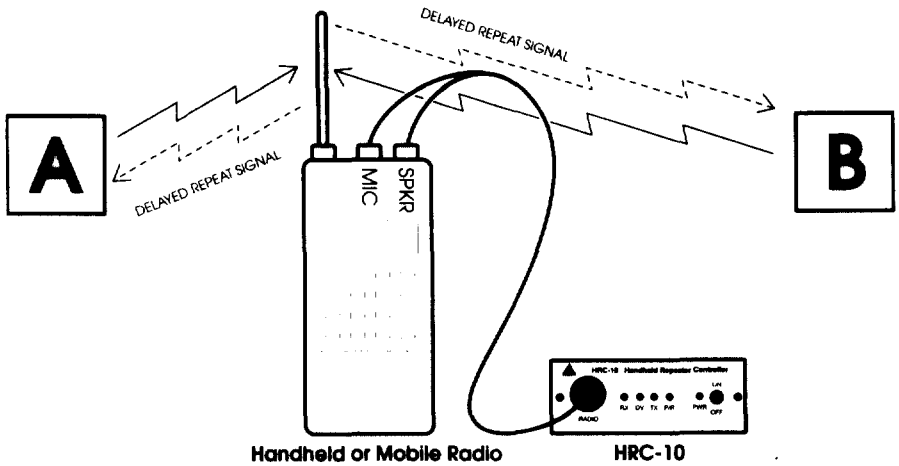

Simplex Operation

An example of one configuration:

Station A and B transmit and receive on same frequency. Radio connected to HRC-10 set to Simplex Mode. Delayed repeater signal heard by both stations.

Can also be used with dual-band radio in full duplex mode.

4/8/94